

ABSTRACT OF THE DISCLOSURE

A practical framework and "near-optimal" routing method which approximates minimum delay routing within a network. A framework for approximating Gallager's minimum-delay routing problem (MDRP) is described with methods for implementing the approximation on real networks subject to frequent topology changes and bursty traffic. The computation of minimum-delay paths is divided into two parts, (1) the establishment of multiple loop-free paths of unequal cost to a destination, (2) allocation of flows to minimize delays using short-term link-cost information. The method provides multi-path routing which overcomes the implementation limitations of optimal routing algorithms, such as oscillatory behavior, and the delays associated with shortest-path routing methods, while avoiding undetected loops.